

Abstract of the Disclosure

Hydrogen purification membranes, hydrogen purification devices, and fuel processing and fuel cell systems that include hydrogen purification devices. The hydrogen purification membranes include a metal membrane, which 5 is at least substantially comprised of palladium or a palladium alloy. In some embodiments, the membrane contains trace amounts of carbon, silicon, and/or oxygen. In some embodiments, the membranes form part of a hydrogen purification device that includes an enclosure containing a separation assembly, which is adapted to receive a mixed gas stream containing hydrogen gas and to 10 produce a stream that contains pure or at least substantially pure hydrogen gas therefrom. In some embodiments, the membrane(s) and/or purification device forms a portion of a fuel processor, and in some embodiments, the membrane(s) and/or purification device forms a portion of a fuel processing or fuel cell system.